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“Step Out From the Old to the New”

IS 3398 (2003): Oil of Patchouli [PCD 18: Natural and Synthetic Fragrance Materials]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

पचौली का तेल — विशिष्ट

(पहला पुनरीक्षण)

Indian Standard

OIL OF PATCHOULI — SPECIFICATION

(*First Revision*)

ICS 71.100.60

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Natural and Synthetic Fragrance Materials Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was published in 1965. In this revision the following changes have been made:

- a) Table 1 has been thoroughly modified. A new requirement, namely, Patchouli alcohol content (by GC analysis) has been incorporated in Table 1.
- b) Gas Chromatographic profile for both polar and non-polar columns along with the identification of peaks for the various constituents including peak for patchouli alcohol have been incorporated.

The true patchouli plant of commerce is growing in a number of countries of south-east Asia, mainly in Indonesia, Malaysia, China, to a lesser extent in Africa, Brazil and USSR. Experimental cultivation was undertaken five decades ago in southern part of India but did not progress further due to nematode attack problem. Very recently its cultivation has been intensified in eastern and south-western coastal areas and southern and north-eastern regions, due to efforts of Kelkar Scientific Research Centre, ICAR, ICEOFF-89 and CSIR using superior cultivars. Generally humid climate with plenty of sunlight is suitable for this crop. Consumption of patchouli oil in the world is about 1 000 tonnes and Indian consumption is about 100 tonnes annually, major quantity is being imported, but increased production is expected in near future. Oil of patchouli is an important ingredient used in perfumery and flavour compositions.

In the preparation of this standard, considerable assistance has been derived from ISO 3757 : 1978 'Oil of patchouli'.

This standard differs from ISO 3757 : 1978 'Oil of patchouli' mainly in respect of the following:

- a) Temperature of determination of relative density, and refractive index is 27°C in the Indian Standard against 20°C in the ISO Standard.
- b) Range for relative density has been stipulated as 0.948 0-0.971 0 against 0.955-0.983 as specified in ISO Standard.
- c) Range for refractive index has been stipulated as 1.502 0-1.512 0 against 1.505 0-1.512 0.
- d) Chromatographic profile as at Fig. 1 and Fig. 2 have been made normative as per the practices introduced by ISO.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test of analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

OIL OF PATCHOULI — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes requirements, methods of sampling and test for the oil of patchouli.

2 REFERENCES

The following standards contain provisions which through reference in this text constitute provisions of the standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standard indicated below:

IS No.	Title
326	Methods of sampling and test for natural and synthetic perfumery materials
(Part 1) : 1984	Sampling (<i>second revision</i>)
(Part 2) : 1980	Preliminary examination of perfumery materials and samples (<i>second revision</i>)
(Part 3) : 1980	Determination of relative density (<i>second revision</i>)
(Part 4) : 1980	Determination of optical relation
(Part 5) : 1986	Determination of refractive index (<i>second revision</i>)
(Part 6) : 1986	Determination of solubility in ethanol (<i>second revision</i>)
(Part 7) : 1980	Determination of acid value
(Part 8) : 1986	Determination of ester value after acetylation and free alcohols (<i>second revision</i>)
(Part 19) : 1998	Gas chromatographic analysis of perfumery materials
1070 : 1992	Reagent grade water (<i>third revision</i>)
2284 : 1988	Method for olfactory assessment of natural and synthetic perfumery materials (<i>second revision</i>)
6597 : 2001	Glossary of terms relating to natural and synthetic perfumery materials (<i>second revision</i>)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 6597 shall apply.

4 REQUIREMENTS

4.1 Description

4.1.1 The oil shall be obtained by steam distillation of the dried leaves of *Pogostemon cablin* (Blanco) Benth of the *Lamiaceae* family.

4.1.2 The oil shall be examined for its colour, clarity, separated water and sediment in accordance with the method described in IS 326 (Part 2).

4.2 Solubility in Ethanol

Material is completely soluble in one to ten volumes of ethanol (90 percent by volume) when tested as prescribed in IS 326 (Part 6).

4.3 The material shall also comply with the requirements given in Table 1.

5 PACKING AND MARKING

5.1 Packing

5.1.1 The material shall be supplied in well closed container, permitting a minimum of air space, as agreed between the purchaser and the supplier.

5.1.2 The material shall be well protected from the light and stored in a cool and dry place.

5.2 Marking

The container shall be marked with the following information:

- a) Name of the material;
- b) Manufacturer's name, address and/or his recognized trade-mark, if any;
- c) Net mass of the material;
- d) Month and year of manufacture;
- e) Batch number; and
- f) Cautionary notice, if any.

5.2.1 BIS Certification Marking

The containers may also be marked with the Standard Mark.

5.2.1.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to

manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 SAMPLING

Representative samples of the materials, each sample containing not less than 50 ml shall be drawn as prescribed under IS 326 (Part 1).

7 NUMBER OF TESTS

7.1 Test for the determination of all the characteristics shall be conducted on the composite sample as prescribed in **4.1**, **4.2** and Table 1.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water shall be used in tests (*see* IS 1070).

NOTE — Pure chemicals shall mean chemicals that do not contain impurities which affect the result of the analysis.

Table 1 Requirements for Oil of Patchouli
(Foreword, Clauses 4.3 and 7.1)

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex (4)	IS No. (5)
(1)	(2)	(3)	(4)	(5)
i)	Colour and appearance	Light yellow to reddish brown, more or less viscous liquid	—	326 (Part 2)
ii)	Odour	Characteristic, leafy, slightly camphoraceous, clinging	—	2284
iii)	Relative density at 27°C/27°C ¹⁾	0.948 0 - 0.971 0	—	326 (Part 3)
iv)	Optical rotation	- 66° to - 40°	—	326 (Part 4)
v)	Refractive index at 27°C ¹⁾	1.502 0 - 1.512 0	—	326 (Part 5)
vi)	Acid value, <i>Max</i>	4.0	—	326 (Part 7)
vii)	Ester value, <i>Max</i>	10	—	326 (Part 8)
viii)	Patchouli alcohol content (by GC analysis), percent	27 - 35	A	—

¹⁾The correction factors for relative density [*see* IS 326 (Part 3)] and refractive index [*see* IS 326 (Part 5)] for each degree Celsius change in temperature are 0.000 64 and 0.000 38 respectively.

ANNEX A

[Table 1, Sl No. (viii)]

GAS CHROMATOGRAPHIC ANALYSIS OF OIL OF PATCHOULI

A-1 GENERAL

The chromatographic analysis is carried out on capillary column. The chromatographic conditions given here are for information and guidance.

A-2 PROCEDURE

A-2.1 The analysis shall be done in accordance with IS 326 (Part 19). The typical chromatograms for oil of patchouli in capillary column (polar and non-polar columns) with the following chromatographic conditions are shown in Fig. 1 and Fig. 2. Patchouli alcohol, the main component of patchouli oil shown by integrator shall be in the range of 27-35 percent.

A-2.1.1 Capillary Column—Polar

Gas Chromatographic Conditions	Polar
Column	: Capillary, silica, length 30 m, internal diameter 0.25 mm
Stationary phase	: Polyethylene glycol 20 M, film thickness 0.25 μ m

Oven temperature programming	: 100°C to 220°C at the rate of 2°C/min and isothermal for 30 min at 220°C
Injector temperature	: 250°C
Flame ionization detector temperature	: 250°C
Carrier gas	: Nitrogen, 1 ml/min
Split ratio	: 1:100
Volume injected	: 0.2 μ l

A-2.1.2 Capillary Column—Non-polar

Column	: Capillary DB-5, 30 m \times 0.25 mm \times 0.25 μ m thickness
Oven temperature programming	: 60° to 240°C at the rate of 3°C/min
Injection temperature	: 250°C
FID temperature	: 240°C
Split ratio	: 1:60
N ₂ flow rate	: 1 ml/min
Time	: 60 min

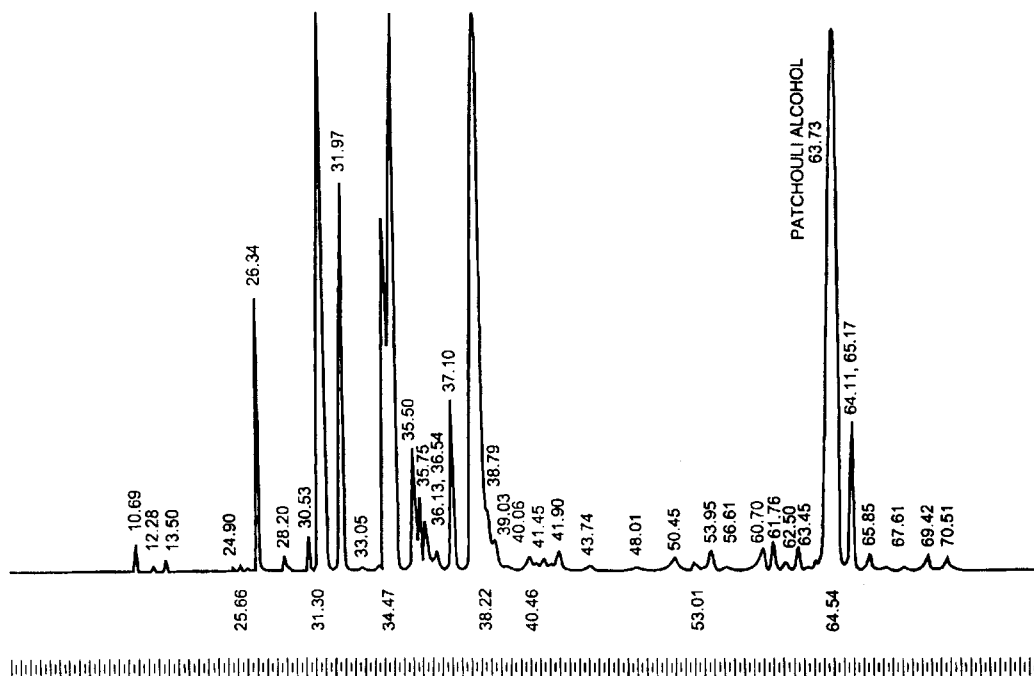


FIG. 1 GC—OIL OF PATCHOULI—POLAR COLUMN

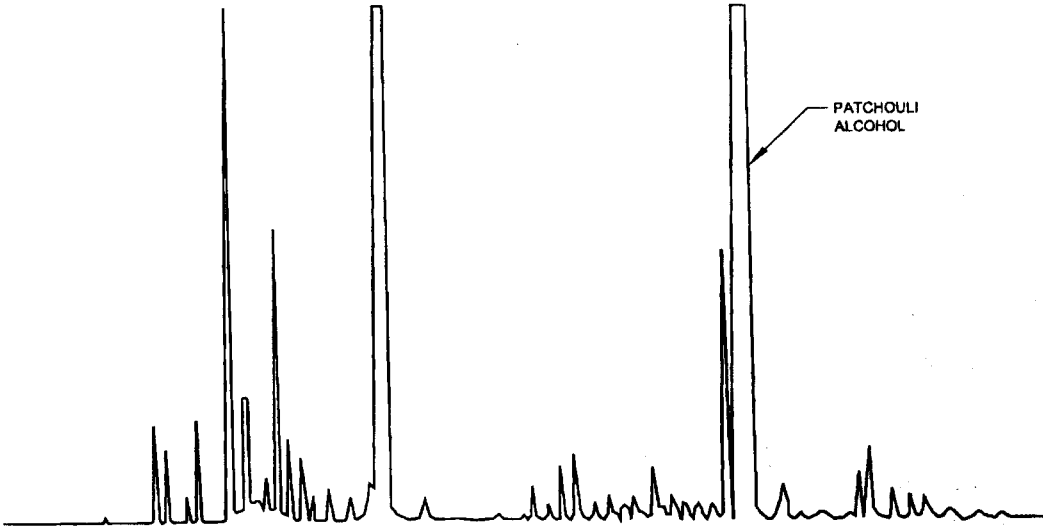


FIG. 2 GC—OIL OF PATCHOULI —NON-POLAR COLUMN

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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